

A K-Net
E-Community
Network Project
in Northern Ontario
for their Health, Teaching
and Learning Partners

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Network Background

The E-Community

The strategy of a data network is always in flux. There is never an extended period of time where new ideas, new technology and new data protocols don't invade the serenity of existing data communications infrastructure. The Northern Ontario group of networks and network partners are no exception to the rule.

It is sometimes necessary to develop a data network infrastructure capable of meeting the demands of a distributed teaching and learning environment. It is also significant to recognize opportunities that will expand the reliability and reach of the network when such opportunities make themselves known. An E-Community is a model network environment that brings together Wide Area Networks in a region and allows the flow of data to stay in the defined geographical area. Northern Ontario is one such region and Lakehead University is the most likely place for the location of a network "meet and greet" environment where partners in health, teaching and learning can co-locate their technology and directly interconnect their equipment.

TODAY

The infrastructure of the many Northern Ontario wide area networks, as they exist today, work as independent systems quite successfully. There are a significant number of these networks such as; K-Net, Crescive Networks, Contact North, SSHA (North Networks), Thunder Bay Regional Hospital, Superior Wireless, Thunder Bay Regional Health Science Centre, Lakehead University, Confederation College, Bell Canada, Thunder Bay Telephone, and Laurentian University in the North East with their ability to provide the same hosting opportunity of a "meet and greet" as Lakehead University. These vast number of networks have various combinations of private leased circuits and all have some connectivity through the Internet.

TODAY continued.....

These major stakeholders and partners in health, teaching and learning link with one another by connection through the public Internet. The routing of the data to them follows a path, usually to Toronto and back or even farther. In short, to transport data to each other in the north the data is routed through the various Internet Service Providers equipment, the public Internet, located in either Toronto or Winnipeg.

Stake holders like K-Net, from Sioux Lookout, send their data over leased VLANs creating a private network and back up through available circuits where appropriate interconnections can be established or simply over the Internet when quality of service is not required or funded. There is no direct path from K-Net to the Thunder Bay Regional Hospital, for example, or directly to any other partner in Northern Ontario who would be involved in a health or teaching and learning environment. Direct connectivity between partners is a vision of the future, an opportunity to develop a truly integrated E-Community.

THE VISION

The Keewaytinook Okimakanak's K-Net Services is working in partnership with FedNor, to bring together Northern Ontario networks in a common "meet and greet" location proposed to be hosted at Lakehead University. K-Net is an agent for the development of community based networks bringing access to its vast number of indigenous communities and to the Northern Ontario health, teaching and learning partners. The concept of this meet and greet environment would be to establish localized data routing in a location that already has a number of partners co-located. Adding additional stakeholders to the existing "localized" data network at Lakehead University, allows the technical aspects of a distributed learning model to become significantly strengthened and enhances network environments.

The network "meet and greet" concept is quite simply; each organization brings its own routing equipment to a location where they share the routing of data traffic, destined for one or more of the stakeholders, directly among themselves, rather than traditionally routing the same data traffic through the Internet and the multitude of routers that one encounters on the public data highway.

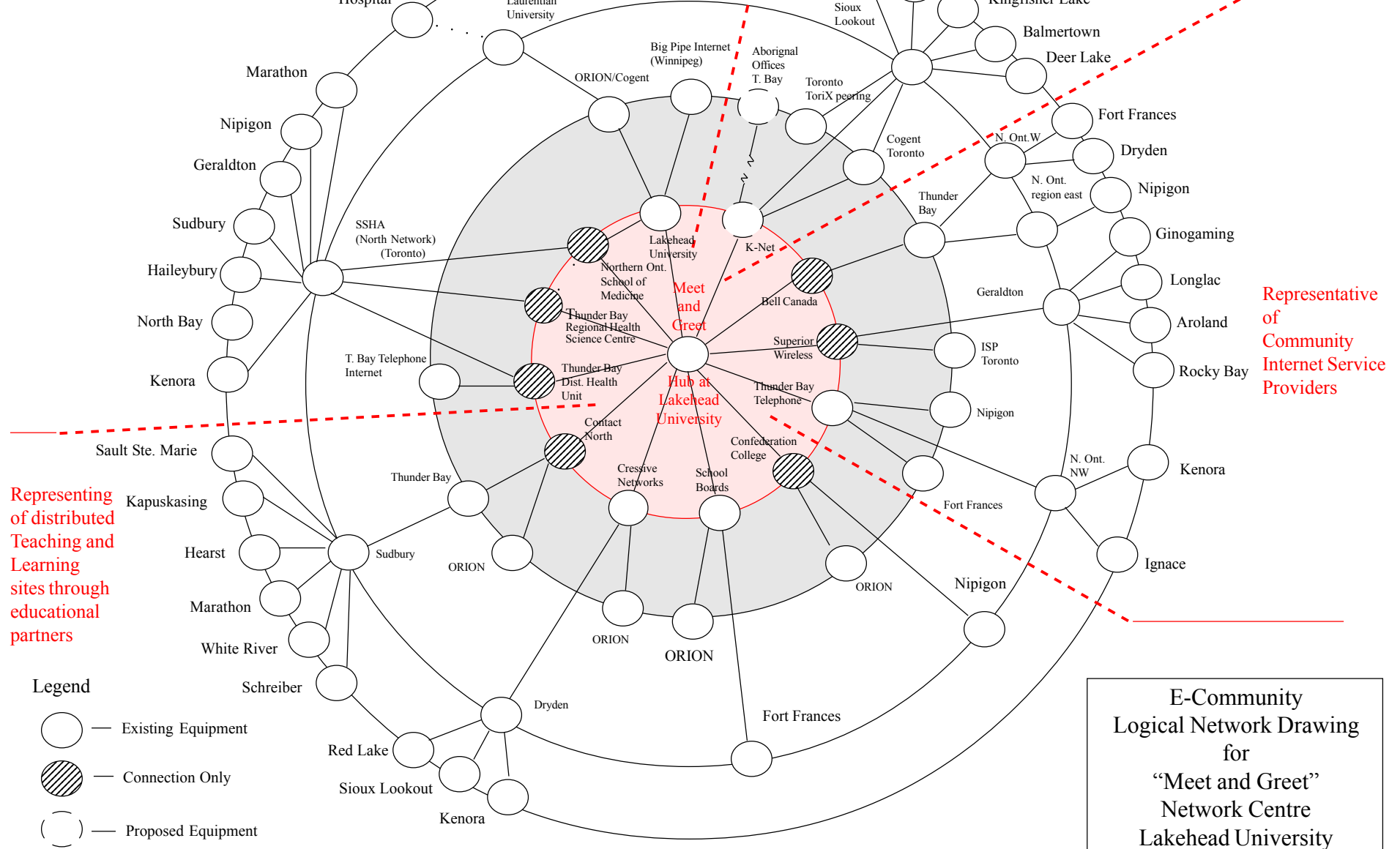
The direct sharing of data between routers means that each partner can allow the stabilizing protocols, that traditionally won't be accepted on the public Internet, to exist on their respective pieces of equipment. Aside from bringing enhanced data protocols amongst the participating networks, each partner can adjust and regulate their own security requirement based on the sensitivity of the information being transmitted.

The vision includes those who already are co-located at Lakehead University, which includes; Confederation College, Contact North, Fort Frances School Board, Cressive Networks the Northern Ontario School of Medicine, and additionally brings in K-Net, SSHA (North Network), Superior Wireless, the Thunder Bay District Health Unit, Bell Canada and the Thunder Bay Regional Health Science Centre.

The following diagram, on page 5, demonstrates the concept of a meet and greet environment. The participating partners networks are much too large to have all their end points identified but rather indicates how data can flow directly in the hub rather than through their Internet connections.

Representing Clinical and Health sites including CCAC regional health units

Representative of 90 Aboriginal communities and clinical sites



THE VISION continued.....

Aside from the sharing of data traffic between routers the stakeholder, for the most part, utilize the services of the ORION network which provides the backbone for the two areas of concentration, Northern Ontario West and Northern Ontario East. (Thunder Bay and Sudbury).

Since much of the equipment is already in place, that is the routers for Lakehead University, Laurentian University, Crescive Networks, Confederation College and the School Boards, it leaves K-Net (and the Thunder Bay Aboriginal organizations), Northern Ontario School of Medicine (Thunder Bay and Sudbury), Thunder Bay Regional Hospital and Thunder Bay District Health unit as partners who are interconnected. The vision includes ensuring the proper routing and switching equipment is co-located at Lakehead University so all involved in the distribution of data and video for the enhancement of health and education in the region can be connected. This plan keeps the data here.

The proposal of a “meet and greet” data network collaboration between teaching and learning partners is not new to the Keewaytinook Okimakanak’s K-Net Services. They have partnered previously with FedNor to connect indigenous communities and have demonstrated their leadership in bringing forward this concept. As of January 2006, the K-Net network provides broadband connectivity services in 29 remote First Nations communities across Northern Ontario. Fifteen of these sites are satellite served using the C-Band satellite network with the hub located in Sioux Lookout. Also 14 satellite served Inuit communities in Northern Quebec and 16 First Nations in Northern Manitoba are part of this satellite network. An additional 22 road access First Nations in Ontario have points-of-presence on the network. Five organizations (Regional Management Organizations - RMO) located across Canada are also on the network accessing the video conferencing services available on K-Net. Each of these RMOs are building broadband connections to First Nations in their region resulting in further interconnections. First Nation organizations located in urban centres across Northern Ontario are also served from K-Net POPs in Timmins, Thunder Bay, Sioux Lookout, Toronto, Geraldton, Sudbury and Balmertown.

Various broadband applications and services are being delivered out of Keewaytinook Okimakanak offices in Sioux Lookout and Balmertown, including a major regional tele-health initiative and the internet high school. As well other K-Net partners’ sites located across the country are now expanding and developing their own regional broadband networks modelled after the K-Net development process.

The diverse partners, in the health, teaching and learning environment, bring together indigenous and non-indigenous communities in a Wide Area Network that supports, data transfer, video conferencing, IP telephony, application sharing, research and medicine in a stable cohesive shared network capable of supporting all traditional transmission protocols not available on the public Internet. The inter-connectivity brings together the majority of regional towns and communities strengthening their connectivity and offering partner services across the entire geographical region of Northern Ontario.

Additional network technology hardware and the installation of fibre optic cable is required to achieve the “meet and greet” goal. With Lakehead University as the host for the physical site new fibre connectivity from the Vickers Street exchange to Lakehead University will be required to bring K-Net traffic to the hub, along with a new connection for Confederation College and the Thunder Bay District Health Unit. The proposed partners can expand to include other agencies in the health and teaching and learning environment who wish to join.

A new fibre optic cable will need to be installed from the Thunder Bay Regional Health Science Centre to Lakehead University bringing the opportunity to share applications and explore research opportunities such as 3D imaging on Lakehead University’s Super Computer for the MRI machine at the hospital returning the live video rendering of these images back to the physician.

SSHA (North Network) enhances the vision by bringing their network connectivity to all non-indigenous hospitals supporting tele-health and video conferencing on its large private network infrastructure. Contact North and its presence as a teaching and learning partner for distributed learning in almost all Northern Ontario communities can directly share one of Ontario’s largest video bridge service which they operate.

THE FUNDAMENTALS

The basic fundamentals of putting together the “meet and greet” project for Northern Ontario are as follows:

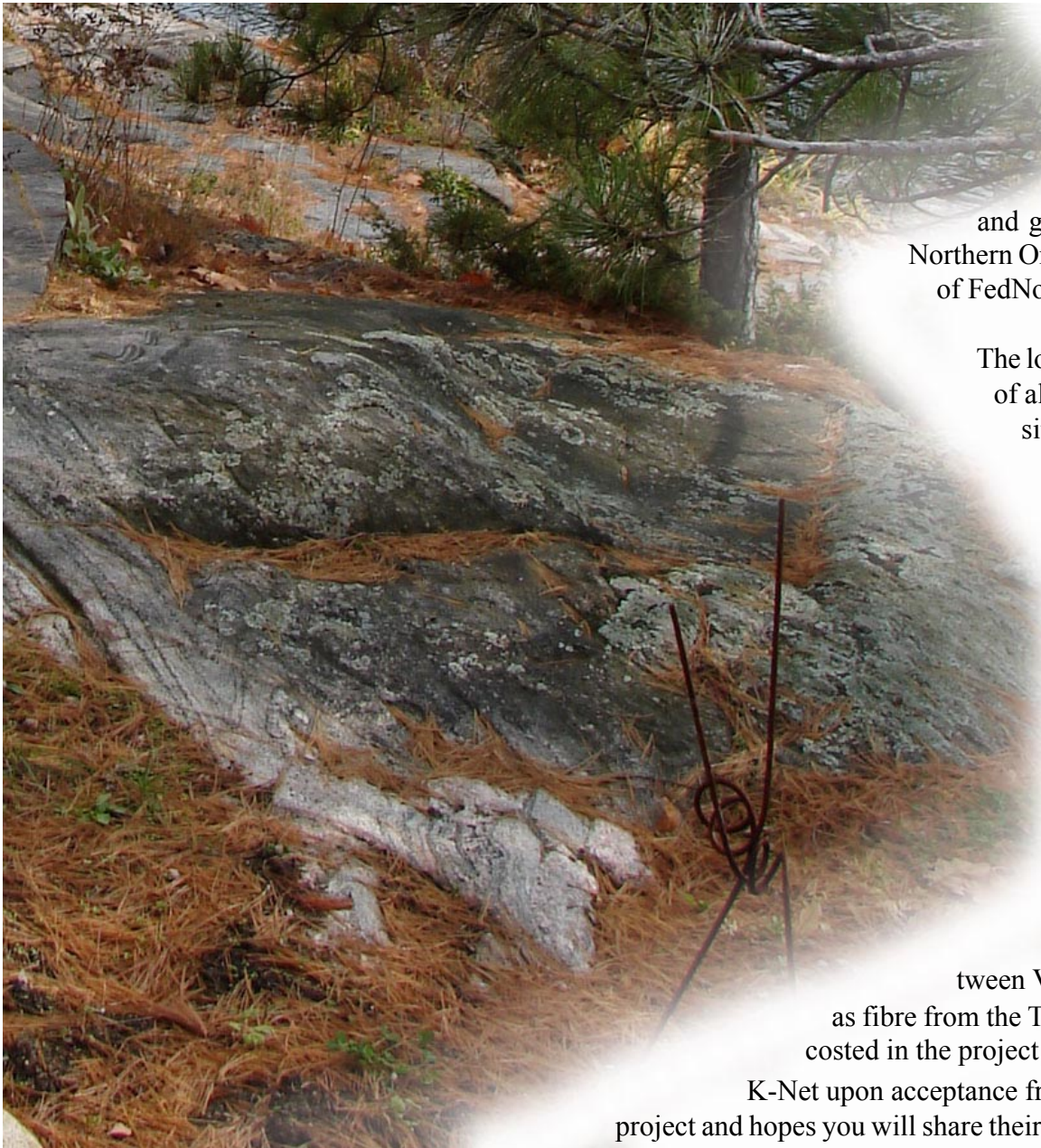
- * Include as many relevant partners who have an interest in health, distributed learning and research
- * K-Net to champion the project for stakeholders
- * Hardware for K-Net, NOSM, Contact North , T. Bay Regional Hospital and Health Unit
- * Fibre required across Lakehead U. property from NOTC to Braun Building
- * “Meet and greet” location at Lakehead University
- * Fibre required from Lakehead U. to T. Bay Regional Hospital
- * Connectivity from Bell Canada for K-Net (Vickers St.) to LU
- * Connectivity from T. Bay District Health Unit to LU by fibre
- * All partner routers to be connected to each other
- * NOSM to provide redundancy for K-Net, Lakehead and Laurentian
- * Develop a budget and overall costing estimate
- * Preparation of tender documents for labour and equipment
- * Estimates of ongoing support and renewal
- * Form partners group to establish future guidelines
- * Implementation and commissioning of systems



WHO BENEFITS?

All partners benefit from peering with each other. As mentioned before, routing stays in the North but more specifically the benefits are:

- * Partners reach all K-Net sites.
- * Thunder Bay Regional Health Science Centre can participate in research directly with Lakehead University, NOSM and the partners, enhance nurse training at Colleges and Universities and acquire network redundancy.
- * Video bridging can be shared directly amongst the partners bridging equipment.
- * Lakehead University, Laurentian University and NOSM can reach all indigenous and non-indigenous Northern Ontario communities directly with private network protocols and standards for superior service, currently driven over the public Internet, as well as share in research directly with the Hospital.
- * Contact North can directly share video bridging services and enhance its utilization of IP delivered distant learning for itself and its partner institutions.
- * Superior Wireless becomes a data network provider to its communities not served by any other provider.
- * Thunder Bay District Health Unit can deliver to Public and High Schools health literacy programs in both indigenous and non-indigenous communities.
- * Confederation College can enhance its delivery of distant learning to its existing Northern Ontario sites as well as new ones that the partners bring to the hub.



Conclusion

Keewaytinook Okimakanak's K-Net services is seeking to establish a data centre "meet and greet" location at Lakehead University to bring together Northern Ontario's teaching and learning partners with the assistance of FedNor.

The location of the centre has been selected based on the number of already existing partners co-located at Lakehead University today.

Additional hardware for K-Net and some partners is required to develop their full participation in the network and include Thunder Bay Regional Health Science Centre, and the Northern Ontario School of Medicine (Thunder Bay and Sudbury). K-Net, as well will upgrade the radio equipment, existing in Thunder Bay, by installing it on the roof of the ATAC building to provide access to Aboriginal organizations in Thunder Bay.

The proposed E-Community project is being established to enhance the delivery of distributed learning throughout the partners connectivity region.

Additional fibre optic connectivity in Thunder Bay between Vickers Street exchange and Lakehead University as well as fibre from the Thunder Bay Regional Hospital to Lakehead University is costed in the project along with the above mentioned hardware.

K-Net upon acceptance from the partners, wishes to proceed immediately with the project and hopes you will share their vision of the model E-Community for all communities of Northern Ontario.